DOCUMENT RESUME

ED 103 885 CS 201 945

AUTHOR Blumberg, Phyllis; Block, Karen K.
TITLE The Effects of Attempting Spelling Before Feedback on Spelling Acquisition and Retention.
PUB DATE Apr 75
NOTE 14p.; Paper presented at the Annual Meeting of the American Educational Research Association (Washington, D.C., March 30-April 3, 1975)

EDRS PRICE MF-$0.76 HC-$1.58 PLUS POSTAGE
DESCRIPTORS Educational Research; Elementary Education; Elementary School Students; Retention; *Spelling Instruction; *Teaching Methods

ABSTRACT

In this study, students learned difficult to spell words by one of three different teaching methods. They saw the correct spelling before attempting it, they attempted to spell the word once before seeing the correct spelling, or they attempted to spell the word several times prior to viewing the correct spelling. Results showed that attempting to spell words before viewing them facilitated acquisition of the words. The teaching methods did not differentially influence long term retention measured at two and six weeks following training. The locus of effects of these training methods was found in initial acquisition rather than retention. (Author/TO)

U.S. DEPARTMENT OF HEALTH,
EDUCATION & WELFARE
NATIONAL INSTITUTE OF
EDUCATION
THIS DOCUMENT HAS BEEN REPRODUCED EXACTLY AS RECEIVED FROM THE PERSON OR ORGANIZATION ORIGINATING IT. POINTS OF VIEW OR OPINIONS STATED DO NOT NECESSARILY REPRESENT OFFICIAL NATIONAL INSTITUTE OF EDUCATION POSITION OR POLICY

ED103885

The Effects of Attempting Spelling Before Feedback on Spelling Acquisition and Retention

Phyllis Blumberg and Karen K. Block

Learning Research and Development Center
University of Pittsburgh

Session number 14.18

CS 201 945

Abstract

Students learned difficult spelling words via three different teaching methods. They either saw the correct spelling before attempting it, or could attempt to spell the word once, or several times, prior to viewing the correct spelling. Results showed that attempting to spell words before viewing them facilitated acquisition of the words. The teaching methods did not differentially influence long term retention. The locus of the effects of some teaching methods, when the words are thoroughly learned, are to be found during initial acquisition rather than evidenced in retention.

The Effects of Attempting Spellings Before Feedback on Spelling Acquisition and Retention

Phyllis Blumberg and Karen K. Block
University of Pittsburgh

Introduction

Effective methods of teaching spelling have been a concern of educators for decades. A number of classroom studies concerned with the most effective methods of presenting words (Wolfe and Breed, 1922; Green, 1923) or providing feedback (Horn, 1969) have been performed in the past. This study addresses a similar problem; it is concerned with the effects that student attempts at spelling a word prior to viewing the word have on learning the correct spelling.

An important component of any research on variations of teaching formats is the development of theory whereby the locus of variations in teaching formats might be assessed. In this study, we viewed learning spelling like other forms of learning. It consists of several stages: encoding, some form of rehearsal and storage in long term memory. Variations in teaching formats may have different influences on the nature of these processes. For example, whether or not students spell a word prior to viewing the correct spelling might influence their visual analysis of the correct spelling which in turn influences the completion of the encoding stage. Increasing the number of attempted spellings from one to several might also influence the pattern of

subsequent visual analysis by the development of increased awareness of "trouble spots," i.e., those which mark the phoneme whose grapheme is to be varied in the next attempt.

The purpose of this experiment, then, was to compare the effects of three variations in exercise format on efficiency of learning and long term retention. The methods differed in that some students attempted a spelling prior to viewing the correct spelling while others did not. Also, the number of attempts permitted prior to viewing the correct spelling was varied.

Method

Subjects. Forty-five students from third through sixth grade of a university laboratory school served as subjects. These students were selected from a larger population on the basis of the quality of their spelling errors committed on a pretest. Only students whose errors were 80% phonetic were chosen for this study. This was done to keep the sample of students homogeneous with respect to the processes they use to learn spellings. It is presently thought that the kind of spelling error students make reveal both different performance and learning processes (see Block, 1974).

Design. The selected students were ranked from best to worst on the basis of standardized spelling achievement test scores, blocked into successive groups of three and randomly assigned to one of three treatment groups. There were fifteen subjects in each group.

Word Materials. Sixty spelling words difficult for fifth graders were selected from the Iowa Spelling Scale. Two pretesting sessions were conducted in the classroom to identify the subjects and the words that those subjects spelled incorrectly. There were thirty words in the final set of words used in the experiment. The thirty words were identified by taking the most frequently missed words in order (to keep the final pool as homogeneous as possible) and at the same time, identifying ten words that an individual subject could not spell.

Training Procedures. The three different training methods are referred to here as Show-Write, Write-Show-Write and Generate-Show-Write. In Show-Write, students were shown the correct spelling, spelled it outloud with the experimenter, then wrote it from memory. After writing it, the correct spelling was shown again and the student had to check his spelling with the correct spelling. If he had written it correctly, the next word was presented. If he had written it incorrectly, he was told to study the correct spelling. When the student finished studying the correct spelling, the card was removed and he had to spell the word again from memory and check it. This study, write, and check procedure was continued with each word until the student spelled it correctly, at which time the next word was presented. In Write-Show-Write, the subject wrote the word first, then was shown the correct spelling and had to check it. If the check revealed that the spelling was correct, the next word was presented, otherwise the student was instructed to study the word. Then, he had to write it again from memory and check it. As in the Show-Write procedure just

explained, this study, write and check procedure was continued until the student produced a correct spelling. Then the next word was presented.

In Generate-Show-Write, the student was permitted to generate several spellings, then choose the one he thought was correct. (The experimenter explained why the Generate and Test procedure was useful and demonstrated it before training began.) If the subject had not generated the correct spelling, the study, write and check procedures (except for the opportunity to write more than one spelling) in the above two groups were used. If the student had generated the correct spelling as revealed by checking, the next word was presented.

In each training session the experimenter used the words in sentences. All training was administered individually. The students received three trials with a ten word list consecutively on one day and three trials on the same words the following day. The list order was randomized on each presentation. All subjects received six trials on a list of ten words under one of three training conditions.

Retention Testing. Retention testing took place two weeks and six weeks after acquisition. Words were pronounced by the experimenter and the students wrote the words they were given in training. No feedback was provided until the second test was completed.

Results and Discussion

Achievement. Analysis of variance revealed that differences in teaching format had no significant effect on spelling achievement in either retention test. Mean achievement levels on each retention test

were also not different. The results of these analyses are summarized in Table 1. Regardless of teaching method, students retained an average of 5.82 and 5.45 words on the first and second retention tests respectively. Both the overall retention level (60%) and the lack of significant format variation effects on spelling retention are consistent with the results of Block, Tucker and Butler (1974) who also varied teaching formats in a computer-assisted spelling drill.

The failure to find significant differences between the treatment groups on the achievement tests would be expected on the basis of laboratory studies of simple list-like learning tasks. These studies (for example, Hawker, 1964) have shown that extensive repetition or practice of items washes out any differential effects of variations in presentation formats. Thus, manipulations of exercise formats when accompanied by fairly extensive practice, or a mastery criterion, appear to produce no differential levels of retention.

Training Data. Two analyses were performed on students' trial by trial spelling performance in order to locate possible effects of the treatments. First, the number of correct spellings before feedback in the Write-Show-Write and the Generate-Show-Write groups were compared across the six acquisition trials. Graphs of the trial by trial number of correct spellings revealed identical "typical" learning curves with a slight decrease in performance between the end of Day 1 (Trial #3) and the start of Day 2 Trial #4). By trial 6, both groups were very close to perfect performance. The number of spellings generated prior to feedback in the Generate-Show-Write group decreased rather consistently

across trials (from a mean of 7 additional attempts across students and words on trial 1 to a mean of 2 additional attempts on trial 6) indicating that as students learned the correct spelling they could rely on direct recall rather than any bootstrapping that recognition could provide.

A second analysis compared all three groups in their ability to profit immediately from exposure to the correct spelling. The groups were compared in terms of mean number of correct spellings written immediately after feedback on each of the training trials. In Write-Show-Write and the Generate-Show-Write groups, our procedure did not require a second spelling if the first spelling had been correct. It was therefore assumed that if the first spelling attempt was correct before feedback, then another, after feedback, had it been written, would also have been correct. This assumption is reasonable and has been confirmed by some unpublished data from other spelling situations (computer-assisted drills and informal spelling inventories). Graphs of these data revealed an increase in mean number correct across trials. A two-way (Format by Trials) repeated measures analysis of variance showed significant main effects of Format and Trials. Table 2 summarizes these analyses. The Show-Write group was consistently inferior to the other two groups, whose performance was similar. At the end of acquisition, the Show-Write group was spelling a mean of 8.8 words correctly out of ten, while the "Write First" groups were performing at a higher level (a mean of 9.5 out of 10).

These data show that teaching treatments did have an effect on trial by trial performance during learning. When students attempt spellings prior to feedback, they are more likely to complete encoding, i.e., to enter the entire correct spelling into memory. Possibly, an incorrect spelling directs attention to the parts of the word that need to be learned. It may serve as a kind of template where failures to match the word receive more attention and extensive visual analysis.

Students self-instructional strategies. Students spontaneously exhibited some very interesting learning strategies as they attempted to learn and remember the words they were taught. Two of these seem particularly relevant for the development of theory that describes how children learn spellings. First, children tended to pronounce words phonetically - as they are spelled rather than how they are pronounced in common speech, even though they were capable of reading them properly. For example, students would pronounce discipline as /dis/-/kī/-/plīn/. This behavior suggests that some form of phonemographic recoding may occur during the learning of some spelling words.

The second type of strategy of interest may be classified as using some form of external support to guide the children's visual analysis of a correct spelling. For example, some students traced the letters of the correct spelling with their fingers when they studied the model. They also drew lines, letter by letter, from the correct model to their own spelling. These and other similar strategies show children's spontaneous use of external supports to aid their study and checking of the correct spelling. Rosner (1971) believes

that external supports aid the discrimination and acquisition of word configuration because these external supports emphasize differences in visual information.

Another strategy observed during acquisition supports our concept that certain parts of the word require more attention during learning than others. When spelling a word, children sometimes wrote the more difficult part of the word, usually the middle letters first, then filled in the remaining letters around those difficult letters. Apparently, children are sensitive to the parts of the word that are hardest to learn. This in turn seems to have some relevance for detailed formulations of encoding and rehearsal processes.

Conclusion

In summary, these and other data suggests that when training is extensive enough to bring words close to mastery as is the case with many individualized procedures, variations in exercise format do not differentially influence long term retention of correct spellings at least in terms of group measures of success. However, variations in task formats do influence selected acquisition processes, perhaps by influencing encoding. It may also influence the distribution of attention and visual analysis. This is an important finding because it suggests that the locus of the effects of some teaching methods are to be found during initial acquisition rather than evidenced in retention. Clearly, many of these suggestions need further elaboration and verification by the more convergent methodologies of basic research.

References

Block, K. K. Task analysis and instructional design: Some relationships between theory and practice with examples from spelling. Unpublished manuscript, University of Pittsburgh, 1974.

Block, K. K., Tucker, S. A., and Butler, P. A. Spelling learning and retention under variations in focal unit of word presentation in a computer assisted spelling drill. Pittsburgh: University of Pittsburgh, Learning Research and Development Center, 1974/3.

Green, H. A. Syllabication as a factor in learning to spell. Journal of Educational Research, 1923, 8, 208-219.

Hawker, J. R. The influence of training procedure and other task variables in paired-associate learning. Journal of Verbal Learning and Verbal Behavior, 1964, 3, 70-76.

Horn, T. D. Spelling. In R. L. Ebel (Ed.), Encyclopedia of Educational Research. (4th Ed.) London: Collier-MacMillan, 1969.

Rosner, J. Perceptual skills - A concern of the classroom teacher? The Reading Teacher, 1971, 24, 543-549.

Wolfe, H. A., and Breed, F. S. An experimental study of syllabication in spelling. School and Society, 1922, 15, 616-622.

Table 1

Number of Words Correct on Both Retention Tests for Each Teaching Format

Repeated Measures ANOVA Summary Table for Posttest Differences

Source	df	MS	F	P
Formats	2	8.4778	.7690	N.S.
Tests	1	8.1000	3.848	.06
Formats x Tests	42	1.9000	.900	N.S.

	Post-test 1	Post-test 2
Mean for Show-Write group	5.00	5.06
Mean for Write-Show-Write group	5.93	5.40
Mean for Generate-Show-Write group	6.53	5.90

Table 2

Number of Words Correct After Feedback

Repeated Measures ANOVA Summary Table for the Differences Between Training Trials

Source	df	MS	F	P
Formats	2	36.5778	5.603	<.01
Sw Groups	42	6.5280	4.661	<.05
Trials	5	64.1955	46.622	<.0001
Formats x Trials	10	1.6267	1.108	N.S.
Trials x Sw groups	210	1.3772		